

DETAILED ACTION

1. This Office Action is in response to the Amendment and the Declaration, both being filed on 01/11/2010. Claims 22-23 have been added and Claims 1-23 are now pending.

Allowable Subject Matter

2. Claims 1-23 are allowed.

3. The following is an examiner's statement of reasons for allowance:

The present claims are allowable over the closest references: Burrington et al. (WO 01/98387 A2) and Mishra et al. (US 5,409,623).

Summary of Claim 1:

| A composition comprising the reaction product of: | |
|---|--|
| A | an isobutylene-diene copolymer having an M_n of about 1000 to about 150,000 and containing thereon an average of about 0.1 to 4 equivalents, per each 1000 units of M_n of the polymer, of carboxylic acid functionality or reactive equivalent thereof, derived from at least one α , β - unsaturated carboxylic compound; and |
| B | an amine component comprising 4-aminodiphenylamine . |

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Summary of Claim 18:

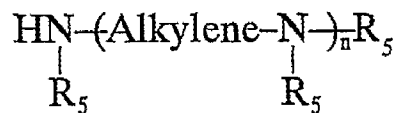
| | | |
|--|--|---|
| A process for preparing a carboxylic derivative Composition, comprising: | | |
| A | reacting | |
| | i | an isobutylene-diene copolymer having an M_n of about 1000 to about 150,000 and having on average about 0.1 to about 2 units of reactive carbon-carbon double bonds per each 1000 units of M_n of the polymer, with |
| | ii | an α , β - unsaturated carboxylic compound having carboxylic acid functionality or reactive equivalent thereof; and |
| B | reacting the product of (a) with an amine component comprising 4-aminodiphenylamine . | |

Summary of Claim 23:

| | |
|---|--|
| A composition comprising the reaction product of: | |
| A | an isobutylene-diene copolymer having an M_n of about 1000 to about 150,000 and containing thereon an average of about 0.1 to 4 equivalents, per each 1000 units of M_n of the polymer, of carboxylic acid functionality or reactive equivalent thereof, derived from at least one α , β - unsaturated carboxylic compound; and |
| B | an amine component comprising 3-nitroaniline . |

Burrington et al. disclose a carboxylic derivative composition derived from a carboxylated isobutylene-polyene copolymer having M_n ranging from about 200 to about 10,000 reacting with at least one of (a) amines characterized by the presence within their structure of at least one condensable H-N < group such as alkylene polyamine:

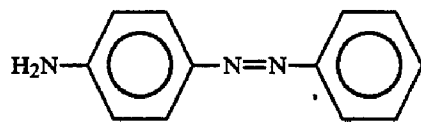
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(b) alcohols, (c) reactive metals or reactive metal compounds, and (d) a combination of two or more of any of (a) through (c), the components of (d) having been reacted with the carboxylated isobutylene-polyene copolymer simultaneously or sequentially, in any order, wherein the copolymer has thereon from about 0.8 to about 7 moles per mole of copolymer of groups derived from at least one α , β -unsaturated carboxylic acid or reactive equivalent thereof (claims 1, 10, 12, and 15). However, Burington et al. do not teach or fairly suggest the claimed composition, wherein the composition comprises a specific isobutylene-diene copolymer and 4-aminodiphenylamine or 3-nitroaniline.

Mishra et al. disclose a lubricating oil composition comprising a major amount of an oil of lubricating viscosity and an amount of about 0.1 to about 3.0 wt % of a modified graft copolymer based on the total weight of the oil composition, comprising an ethylene alpha-monoolefin copolymer comprising about 15 to about 80 mole % ethylene, about 20 to about 85 mole % of at least one C_{3-10} α -monoolefin and 0 to about 15 mole % of a polyene selected from non-conjugated dienes and trienes and having an average molecular weight ranging from about 5,000 to about 500,000; which is grafted with at least one ethylenically unsaturated carboxylic acid material; and then modified with an amino aromatic compound; wherein the ethylenically unsaturated carboxylic acid material is maleic anhydride or itaconic anhydride and wherein the aromatic amino compound can be 4-phenylazoaniline:

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(col. 4, line 51; claims 1 and 5-6). However, Mishra et al. do not teach or fairly suggest the claimed composition, wherein the composition comprises a specific isobutylene-diene copolymer and 4-aminodiphenylamine or 3-nitroaniline.

In light of the above discussion, it is evident as to why the present claims are patentable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Ling-Siu Choi/

Primary Examiner, Art Unit 1796

April 10, 2010